

BRIGHT STEELS

1020 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.20	0.25	0.45	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M1020	1020	070M20 EN3B	1.0402 C22	

DESCRIPTION	Cold finished (drawn or turned and polished) mild steel. Suitable for case hardening. Welds readily. 1020 is a general purpose low tensile mild steel with a tensile strength in the range of 430 - 790 MPa, and Brinell hardness range 125 - 230. 1020 is not suitable for quench and temper applications. Normally used in the as supplied condition.
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APPLICATIONS	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles & small gears.
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	430-790	340-610	10-13
	Turned & Polished	410-560	230-330	22

HEAT TREATMENT	Carburize	900-950°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

WELDING	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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SIZE RANGE	Round	4.76 to 254 mm
	Flat	10 x 2 to 101.6 x 76.2 mm
	Square	6.35 to 150 mm

1030 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.30	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	M 1030	1030	EN5B	1.0528 C30	

DESCRIPTION	Cold finished (drawn or turned and polished) carbon steel. The higher carbon content of 1030 make this grade stronger than 1020 and is suitable for induction hardening in sizes below 38 mm Dia. 1030 is normally used in the as supplied condition with a tensile strength of 520-850 MPa
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APPLICATIONS	General engineering components, machinery parts, shafts, camshafts, pins, ratchets, spindles, axles, small gears, & hydraulic cylinders
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	520-850	410-670	10-12
	Turned & Polished	500-630	250-350	20

HEAT TREATMENT	Carburize	Not Recommended
	Harden	850-880°C Water quench.
	Temper	180-210°C air cool

WELDING	Readily weldable, use Bohler FOX OHV electrodes or EMK-6 for MIG or TIG welding.
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SIZE RANGE	Round	4.67 to 152.4 mm
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1045 Carbon steel

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.45	0.25	0.75	0.04	0.04
NEAREST STANDARD	AS	AISI	BS	DIN	
	1045	1045	080A47 EN43B	1.0503 C45	

DESCRIPTION	1045 is a medium tensile carbon steel with good strength and impact properties. Supplied in the cold drawn or turned and polished condition, with a typical tensile strength range of 600 - 950 Mpa. Good machinability.
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APPLICATIONS	Applications requiring flame or induction hardening. High strength shafts, hydraulic rams, camshafts, pins & spindles
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	640-950	500-760	8-9
	Turned & Polished	600-720	300-440	14

HEAT TREATMENT	Carburize	Not suitable
	Harden	850-860°C. Oil or Water quench, 54-60 R/C
	Harden (Induction)	820-850°C Water quench, 54-60 R/C
	Temper	180-210°C air cool

WELDING	Limited to repair work, use Bohler EV-63-refer Bohler welding literature
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SIZE RANGE	Round	6.35 to 152.4 mm
	Square	25.4 to 38.1 mm
	Hexagon	24 to 50.8 mm A/F

1214 Free machining

Typical Analysis (Ave. values %)	C	Si	Mn	P	S
	0.15	0.10	1.0	0.07	0.30
NEAREST STANDARD	AS	AISI	BS	DIN	
	1214	~1213	220M07 EN1A	1.0715 95Mn28	

DESCRIPTION	1214 is cold finished (drawn or turned and polished) free machining low tensile 370 - 750 MPa mild steel. Generally used in the as supplied condition.
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APPLICATIONS	A large range of machined products where high volume is required from automatics.
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MECHANICAL PROPERTIES (Ave. values)	Condition	Tensile Strength MPa	Yield Strength MPa	Elongation %
	Cold drawn	400-750	290-580	7-9
	Turned & Polished	370-510	230-300	18

HEAT TREATMENT	Carburize	900-920°C. Furnace or Air cool
	Harden	780-800°C Water quench.
	Temper	180-210°C air cool

WELDING	Not Recommended
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SIZE RANGE	Round	3.18 to 152.4 mm
	Square	6 to 101.6 mm
	Hexagon	6.35 to 101.6 mm A/F

TOLERANCES for bright bar	Rounds			Square	Hex	Flat
	Precision Ground	Cold drawn	Turned & Polished			
	h8	h10	h11	h11	h11	h11
	Tolerance mm					
	Dia/Cross section	h7	h8	h9	h10	h11
	≤ 3	+0 / -0.010	+0 / -0.014	+0 / -0.025	+0 / -0.040	+0 / -0.060
	>3 - ≤6	+0 / -0.012	+0 / -0.018	+0 / -0.030	+0 / -0.048	+0 / -0.075
	>6 - ≤10	+0 / -0.015	+0 / -0.022	+0 / -0.036	+0 / -0.058	+0 / -0.90
	>10 - ≤18	+0 / -0.018	+0 / -0.027	+0 / -0.043	+0 / -0.070	+0 / -0.110
	>18 - ≤30	+0 / -0.021	+0 / -0.033	+0 / -0.052	+0 / -0.084	+0 / -0.130
	>30 - ≤50	+0 / -0.025	+0 / -0.039	+0 / -0.062	+0 / -0.100	+0 / -0.160
	>50 - ≤80	+0 / -0.030	+0 / -0.046	+0 / -0.074	+0 / -0.120	+0 / -0.190
	>80 - ≤120	+0 / -0.035	+0 / -0.054	+0 / -0.087	+0 / -0.140	+0 / -0.220
	>120 - ≤180	+0 / -0.040	+0 / -0.063	+0 / -0.100	+0 / -0.160	+0 / -0.250
	>180 - ≤250	+0 / -0.046	+0 / -0.072	+0 / -0.115	+0 / -0.185	+0 / -0.290
	>250 - ≤315	+0 / -0.052	+0 / -0.081	+0 / -0.130	+0 / -0.210	+0 / -0.320

LOCATIONS

Bohler Uddeholm Australia Pty Ltd ABN 15000013052

Sydney	129-135 McCredie Rd Guildford	2161	Ph (02) 8724 5554	Fax (02) 8724 5555
Newcastle	3 Pavilion Pl Cardiff	2285	Ph (02) 4954 6611	Fax (02) 4956 5773
Albury	1 Eames St Albury	2640	Ph (02) 6041 3399	Fax (02) 6041 1820
Wollongong	40 Doyle Ave Unanderra	2526	Ph (02) 4272 6544	Fax (02) 4272 7563
Marayong	1/21 Binney Rd Marayong	2148	Ph (02) 9831 4431	Fax (02) 9671 1682
Melbourne	282-290 Greens Rd Dandenong	3175	Ph (03) 9767 5554	Fax (03) 9767 5555
Bayswater	4 Amsted Rd Bayswater	3153	Ph (03) 9739 8022	Fax (03) 9739 8033
Adelaide	1 Williams Cir Pooraka	5095	Ph (08) 8368 4554	Fax (08) 8368 4555
Brisbane	12-18 Limestone St Darra	4076	Ph (07) 3712 9554	Fax (07) 3712 9555
Townsville	9-11 Caldwell St Garbutt	4814	Ph (07) 4479 4800	Fax (07) 4725 1316
Perth	29-33 Gauge Cir Canningvale	6155	Ph (08) 9455 8672	Fax (08) 9455 8673
Kewdale	5 Beete St Welshpool	6106	Ph (08) 9350 9582	Fax (08) 9350 9683
Launceston	20 Murphy St Invermay	7248	Ph (03) 6334 3542	Fax (03) 6331 4001

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